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# THE NATIONAL CENSUS BUREAU AND OUR CITIES

BY ERNST C. MEYER

*U. S. Bureau of the Census*

The purpose of this paper is two-fold: first, to achieve a better understanding of the methods, problems, and results of the collection of statistics of cities by the National Census Bureau; and second, to arouse if possible a keener interest among the members of this Association in the accomplishemnt of the ultimate purpose for which this work is being carried on—an interest which it is hoped may lead to active assistance on the part of individual members along the lines indicated below.

Twelve years have now elapsed since the collection of statistics of cities was first regularly undertaken by the national government. From 1898 to 1902 this work was conducted by the Bureau (at that time Department) of Labor. In 1902 this inquiry was assumed by the Census Bureau, which, as is well-known, was made a permanent body at that time.

Originally only a rather modest inquiry into city finance was made. More recently however the work has been peculiarly favored because of the well-known deep interest in municipal affairs which Dr. Durand brought to his chair as Director of the Census, and also because of a similar interest on the part of the Assistant Director, Dr. W. F. Willoughby. And so it was but natural that under the able immediate direction of Dr. LeGrand Powers this work should blossom forth into an elaborate investigation of both financial and physical statistics, the latter including employees, equipment, and other physical property. During the current year a comprehensive study is being made of physical statistics covering the following departments of city service: sewers, refuse disposal, and highways, the latter including street cleaning and sprinkling.

It may be of some convenience to know at the outset that this paper is divided into three parts covering: methods, problems, and results.

METHODS

As is well known the Census Bureau has at times been the subject of criticism both because of the form and character of data published, and because of the delay in its publication. Intelligent criticism means progress. Some of you have in this wise contributed to progress. At the same time the writer believes that a brief exposition of the methods pursued in this work may be beneficial.

The subject of methods may be considered under three heads: first, the preparation of the schedule or form of inquiries; second, the collection of the statistics by special field agents; third, the publication of the statistics.

*Preparation of schedule:* The art of asking for everything that is needed; and of not asking for anything that is not needed, is a difficult one. The first rough drafts of the inquiries are prepared in the office. Copies are then sent to experts in the various fields of finance and physical statistics. In some cases mooted problems are settled by correspondence; in others conferences are held in which details are thrashed through in almost painful elaboration.

Aside from the determination of the subject-matter of the inquiries and their exact wording, much time and painstaking effort is devoted to the preparation of instructions to the special field agents who are to collect the information. Practically every inquiry is carefully interpreted and directions are issued in great detail as to how unusual situation in the various cities visited are to be handled. They also contain much purely instructional matter of a general character.

Some idea of the elaborate form which these instructions assume may be gathered from the fact that the instructions on municipal finance alone represent a 135-page volume of fine print.

*Collection of statistics:* At the present time the Census Bureau collects practically all of its information on cities not by correspondence, but, as already indicated, through the medium of special field agents. With the improvement of accounting systems and an increased interest in this work on the part of cities, the more economical, where practicable, system of correspondence can be gradually developed.

Every new agent goes through a practical course of instruction in the central office. Economy and expedition govern in the assignment of cities to agents. During the past year 35 field agents collected statistics in the 158 cities of over 30,000 population. Most

of these men have had several years of service, and some have had no less than 10 years of experience, having grown up, so to say, with this work. The demand of politics, it must be confessed, sometimes does inject new blood which neither invigorates nor increases efficiency while on the other hand the consciousness of salubrious political support, at times, proves a powerful antitoxin to undue assiduity even in case of some veterans. That however is merely stating a trite and outworn fact of the limitations of governmental machinery.

Arrangements have been made under which a majority of the field agents spend several months of each year doing work in the central office at Washington, thus maintaining their familiarity with both ends of the work.

*Publication of statistics:* This includes the editing of schedules of agents; the construction of tables for the presentation of data; the tabulation of data; the interpretation of data, or preparation of the text; the printing of the completed report.

A large amount of the work of the central office has to do with the editing, or checking-up, of the schedules which field agents send in. This is done by making a close comparative study of the figures reported with those contained in the published reports, if any, of the city; and with the report of the agent for the preceding year. Wherever an explanation of discrepancies has not, as directed by instructions, been made by the agent, the specific facts are brought to his attention once more. Even correspondence with city officials may be conducted to clear up inconsistencies.

The preparations of tables for the presentation of the statistical data involves a procedure resembling that of the preparation of the schedules of inquiries. Tentative drafts of tables are made and submitted for criticism to experts in the various fields. Conferences and correspondence follow. As the work progresses from year to year and the tables assume their most practical, and therefore most permanent form this phase of the work will involve less and less time.

As soon as a sufficient number of schedules have been edited and corrected and the tabular forms have been determined the work of the tabulation of data is hurried along by specially trained clerks guided by expert tabulators.

The completed tables are next made the basis for an interpretative text discussion. Because of the unavoidable inaccuracy of some of the data collected, and the incompleteness of the records in others this task becomes a difficult one. Generalities are never of much

use, and definite conclusions are frequently rash and fearsome scientific ventures. Hence in the past the Census Bureau has probably been wise in refraining in large measure from both.

The text writing done, the scene shifts to the Government printing office which, though operating with well-known marvelous time-saving devices and machinery, is occasionally a serious accomplice in retarding the appearance of the bulletins of statistics of cities.

## METHODS

*Expedition in publication of the bulletins:* This is a problem which has been vexing all who have been concerned with this work since its inception. The statistics of cities for 1908 are just now appearing; and even this is, the writer believes, a new record in speed. A thorough appreciation of the reasons for this delay may deaden somewhat the force of shafts directed at this apparently very vulnerable spot.

These reasons are to be found largely in the conditions which prevail in our cities; partly in the circumstances and unavoidable limitations of the work in the central office; and to a certain extent also, as already suggested, in the delay in printing.

It is difficult to portray adequately the obstacles which confront agents in the cities. Many cities publish no printed reports at all; others publish reports which are quite useless; some, and particularly New England cities, publish very valuable reports. In some cases accounts have been out of whack and balances have not balanced for years. Once helped back to an equilibrium by the field agent such cities have generally succeeded in keeping their balance. Even in large cities it not infrequently happens that a city has no record at all on important matters, particularly in the way of physical statistics.

The following extract from a letter written by the city electrician of a city of over 250,000 population in response to a call for information on street lighting will serve to set forth in concrete fashion what the Census field agents at times must face; I quote with due reverence to the grammar of the writer:

> The series street lighting is a mixture there don't anybody seem to have any real definite idea of any information at all. . . . The writer knows that there are more or less magnetite lamps and enclosed series arcs, but I do not think that there are any open arcs, etc.

To this must be added the constant confusion due to the adoption of new charters, or amendments to charters, the enactment of new state legislation, the upheaval in the city administration due to political upsets, the constant change in personel. Were it not for these far-reaching factors the annual visit of the field agent would serve to establish a personal relationship between the city and the central office; it would increase the interest of the city officials in this work, increase their ability in supplying the facts sought, and greatly accelerate the movement towards improved accounting.

The amount of time which a field agent must spend in a city, is probably far greater than the uninitiated would surmise. During the last year the following number of working days were spent in certain of our largest cities in the collection of physical statistics on sewers, refuse disposal, and highways, the latter including street sprinkling and cleaning: Philadelphia, 24; Boston, 35; St. Louis, 40; Chicago, 32, New York, 120. In the collection of financial statistics the working days put in were: Philadelphia, 105; Boston, 88; Chicago, 171; New York, 178.

The circumstances and unavoidable limitations of work in the central office also contribute to the delays. The careful editing involves an expenditure of a great deal of time. The employment of a larger editorial force would necessitate the laying-off of part of such a force during a large part of the year. The maintenance of a permanent force of experts would under such circumstances become an impossibility. Field agents, like other common mortals, do not all work with equal speed or equal ability. Their corrections of inconsistencies discovered by editors must be made in the field after they have left the particular city involved, and while carrying on their work in some other city. This occasions more delay.

The employment of a large force of field agents who might complete this part of the work in a short time meets with the same objection made to the temporary enlargement of the central office force. A corps of expert agents could not be maintained on that basis. Moreover, since the cities prefer to have but one or two agents visit them at any one time, the largest cities would set the limit within which the work could be completed at six months and more.

Gradually, however, solutions for these difficulties are found, and with them the speed of publication will be constantly accelerated. It is well to bear in mind that the investigation of city statistics has been constantly and rapidly growing, overwhelming those in charge with

new problems, and yet in spite of its newness it is rich in germs of incipient success. The improvement of the unhappy conditions prevailing in our cities is paramount, And incidentally it might be remarked that when once these conditions have approximated an ideal, one of the main reasons for the prosecution of this splendid work on the part of the Census Bureau will have been removed.

*Uniform forms of inquiries, or schedules,* for all statistical bodies, city, state, and national, as well as for all private organizations collecting city statistics. This is another vital problem the solution of which will contribute immensely towards the goal of improved city accounting. It will remain acute particularly during the next few years, because of the rapid extension of the field of inquiry into municipal statistics. Well begun is half done, applies with great force here. State statistical bureaus are gradually differentiating from their general work so-called municipal divisions, a movement in which Massachusetts leads. These municipal divisions send out inquiries calling for statistics to all the cities of the state, in much the same way that the national division of statistics of cities is collecting information. It seems imperative that every effort should be made where such an investigation is inaugurated by any state bureau to follow the same general form or scheme of inquiry which is used by the national Census Bureau, with only such modifications as the state law or peculiar local conditions demand. Differences of opinion are bound to arise as to both scope and form of inquiry. The Census Bureau fully realizes that it does not possess a monopoly of practical ideas upon this subject. It has consistently invited intelligent criticism and frank suggestion. But it is equally insistent in its appeals for coöperation and conferences in order that divergent views may be harmonized and a useless waste of effort and energy in a many-cornered tug-of-war be avoided. Only recently the writer received a letter from the chief clerk of an important department of city service in one of our leading states in which that official expressed his regret that he could not keep his books in such a way as to supply more readily the information called for by the national Census Bureau and added that he had only recently changed his system of bookkeeping to conform to the demands for information on the part of the state statistical bureau. The chances are that in this case the state bureau is not entirely right and the national bureau is not entirely wrong. There is urgent need that the two bodies get together. Both have the same common aim. A jerky span accomplishes far less than does a steady team.

It is far more simple to begin such work right when first it is organized in the states, than to remodel the plan after its introduction. Should occasion offer, the writer sincerely hopes that members of this Association will advocate the advisability of a conference with the national Census Bureau before legislation is enacted or a state municipal division is launched in some other way.

It seems not improbable, even admitting certain existing constitutional difficulties, that with the progress of things, the national Bureau may find it expedient to collect its information through the medium of the state bureaus, thus affecting both a considerable economy and preventing a great duplication of effort.

What has been said of the necessity of coöperation and the adjustment of conflicting views on the part of state and national municipal divisions, applies with equal force to the municipal improvement societies, the civil engineering societies. and the many other organizations interested in one phase or another of civic improvement. Reacting under the growing pressure for facts and figures on the part of their members, these organizations are circulating among city officials a rapidly increasing number of schedules or forms calling for certain statistical information. Until the idea of coöperation and conference and uniformity of procedure has percolated through in every direction, and it will probably require a rather extensive and strenuous cultivation of the soil to accomplish this, we may expect to find any collection of cards, schedules, and forms, as to-day in circulation, to represent a unique piece of scientific mosaic which does full justice to the reputed versatility of the American citizen.

City officials naturally chafe under such a bombardment of promiscuous interrogation. They cannot be expected to see the point of an argument in favor of uniformity of accounting when intelligent men in the same breath appeal to them for statistics under guises whose number is limited only by the number of appeals.

*Uniform day for closing of city books*: At present the fiscal years of cities close during every month of the year. An attempt to introduce arbitrarily uniformity in fiscal years must necessarily fail because of the fact, as is well-known, that the fiscal year of a city is generally most intimately related to both the financial machinery of city and state as well as to administration in general. While eminently desirable an improvement in this direction is apt to come about only in the very slow process of governmental evolution. But while we wait for the rather slow chariot of progress, the vital thing sought

can be accomplished in another way. Any progressive accounting and bookkeeping system makes provision for, or permits with great facility of, the closing of the books at the end of every month. But all that is needed in this particular case is that the cities of this country adopt a uniform policy to close their books on one and the same day, irrespective of their fiscal years. To set the wheels agoing in this direction obviously is no mean task. But it can be done.

*Development of units of efficiency:* It may be said that the real vintage of all effort in the collection of statistics of cities is the development of units of efficiency with which to measure the efficiency of city government in individual cases, and thus enable the public to gauge administrative service quite as effectively as we can with the use of the Babcock test tell whether milk is milk or is something else.

Efficiency, as we know, is expressed by two elements: cost and service. Either one without the other is wholly inadequate as a measure of effciency. Generally speaking, units of cost are developed from financial statistics; while standards of service are developed from physical statistics. Through the correlation then of the figures of cost and the figures of service we obtain what may be called units of efficiency.

Originally the Census Bureau collected financial statistics only and contented itself with the development of as tolerably accurate units of cost as the circumstances permitted. It undertook also, some years ago, the collection of physical statistics, and the bulletins of 1905 and 1907 took the first rather uncertain steps in the direction of the development of units of efficiency. It was well known at the time of the appearance of these bulletins that many of the statistics were prima facie inaccurate as measures of efficiency, and did not permit of an intelligent and safe comparison of cities with each other. They were published however in order to arouse discussion, to set men to thinking, to prepare the way for a more extensive and more intensive study. The bulletin of 1909 hopes to carry this work one step further.

This is probably the largest and most vital problem which this division of the Census Bureau has to solve. The fundamental difficulty lies with the incompleteness and inaccuracy of city accounting systems which today do not yield precise records of costs or of quality of service, upon which to calculate units of efficiency. These records must possess great detail, as is evident from the following illustration, which at the same time may serve to demonstrate the practical evolution

of a unit of efficiency in street cleaning through the correlation of financial and physical statistics; that is the combined interpretation of the cost of street cleaning and the character and extent of the cleaning done.

In the Census Bulletin of 1907 we find that the average cost per capita of street cleaning for all cities of from 30,000 to 50,000 population is 32 cents, whereas the average cost per capita in case of all cities of over 300,000 is no less than 95 cents, practically three times as high. Now we all know that whatever the shortcomings of the street cleaning departments of our great cities their efficiency is certainly more than one-third that of the smaller cities. In the development of a unit of efficiency, therefore, we find that the mere cost of a function is not a safe measure.

But the Census Bureau also collected certain physical statistics on street cleaning and determined the area in square yards of all streets of a city subject to regular cleaning. In the search for a measure of efficiency these two elements of cost of cleaning and of total area of streets subject to cleaning were combined. It was found that in case of the smaller group of cities the cost per 1000 square yards of streets regularly cleaned was $39 whereas that for the largest cities was $112. Again we must conclude that this measure of efficiency is not a correct one. And if we pause a moment, it will occur to us that undoubtedly our large cities are compelled to clean a given area far more frequently than are our smaller cities, hence the cost per 1000 square yards subject to cleaning must of necessity be greater.

The Census Bureau enables us to carry our search for a measure or unit of efficiency a step further. Acting on the suggestion just made we conclude that we shall arrive at a far more accurate measure if we can figure the cost on the basis of the gross area of cleaning done; that is if the large cities clean 1000 square yards of streets 300 times in a year we figure the cost on the basis of 300,000 square yards of cleaning done; and if the smaller cities clean 1000 square yards but 100 times we figure the cost on the basis of 100,000 square yards of cleaning done.

It was found by the Census on this basis that the cost of street cleaning in the smaller group of cities was $345 per 1,000,000 square yards cleaned; whereas that of the larger group was $589 per 1,000,000 square yards cleaned. Here then we notice distinct progress towards a correct measure of efficiency; but the difference in cost is still un-

reasonable, and we must conclude that the physical statistics of area cleaned do not present a complete picture of the standard or grade of street cleaning service performed. This latter fact is brought out even more forcibly when the cost per 1,000,000 square yards of streets cleaned in case of the largest cities is compared. We find that it cost Philadelphia but $239 whereas it cost St. Louis, though next in size, no less than $916; while it cost New York $784, and Chicago $686.

There are obviously other elements which enter into the character of street cleaning service rendered than mere gross area of streets cleaned. There is the important factor of the method of cleaning, whether by hand, by machine, or by flushing, or by a combination of all three or two of these methods, and the extent to which each is employed. These facts must be known in order that a correct guage of the service performed may be obtained. But we now get to the point where the city records begin to crack and collapse. Probably but few field agents have been able to obtain accurate data on these services during the past year. Almost all of them have however obtained data of some kind, an estimate or an assurance based on rudimentary records.

Aside from this data information must also be had on the area of the various kinds of paving subject to each form of cleaning, as this factor affects both the cost and the character of service. There is probably no city in the country which keeps an accurate record of such physical statistics.

On the cost side the matter of equipment, and of the number, classes salaries, and wages of employees engaged in this work are important. Accurate physical statistics of this character can be obtained in but a few cities.

The above illustration ought to demonstrate the necessity of a further improvement of city accounting before great progress towards the evolution of correct measures or units of efficiency can be made. It ought also to demonstrate that the improvement of the records of physical statistics is equally as urgent as is that of financial statistics. This statement should be emphasized, underscored, italicized. Reform has heretofore had its eye almost entirely upon the financial records; yet the illustration given plainly demonstrates the futility of efforts to compare city services on the sole basis of cost. Comparative studies are however the primary purpose of the statistics collected. The improvement of the records of physical statistics

therefore becomes paramount. Without these statistics, mere cost comparison is a one-legged affair, hard to keep up and easy to get away from.

## RESULTS

The writer keenly realizes that he has consumed too much time in discussing some of the problems which make life interesting in this division of the Census. He will therefore take a short cut home in speaking of the concrete results already attained in this work. An imposing story could be told of the beneficient influence of the Census work upon the cause of accounting in Ohio, Indiana, Massacuhsetts, and other states; of the achievements of the two conferences on uniform city accounting held in Washington in 1903 and 1906 at the instance of the Census Bureau, and under the leadership of Dr. Powers; of the numerous addresses and papers which have been presented by officials of the Census Bureau in creating sentiment and enlarging popular interest in the subject of improved accounting; of the many valuable records prepared for cities by field agents; of the annual missionary work done by some of these living pillars of the cause, and, as in other fields of human endeavor, of the backsliders, and the obdurate. This would be a long, but on the whole an encouraging story.

Indirectly also this work has left its mark, though in forms not so easily measurable. The bulletins, though they may fairly claim distant kinship with historical literature, are storehouses of information. Governmental policy demands that they be free from specific critical comment. As a result they present a far more modest and harmless appearance than there contents might provide. And their full utility is apt not to be discovered with out a considerable interpretative study of the data presented.

Summarizing briefly the most vital points aimed at, it would seem that such interest in this subject as you may have, may with profit be directed towards the advancement of the following policies: first, close and harmonious coöperation between city, state and national statistical bodies dealing with municipal statistics, and private organizations interested in civic problems, looking towards the adoption of uniform methods of statistical inquiry, within the limits set by state laws and special conditions; second, the closing of the city accounts and records on one and the same day everywhere, and irrespective of the closing of the fiscal year; third, improvement not only of the recording of financial, but of physical statistics. The

progress and vital results of the work of the Census Bureau will depend largely upon the speed and success with which the significance of these factors is generally recognized, and the effectiveness with which the ideas which they represent are translated into practical achievement. To this task your coöperative interest is invited.